(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 096 230 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
02.09.2009 Bulletin 2009/36

(51) Int Cl.:
E04F 13/08 *(2006.01)* ***E04F 15/02*** *(2006.01)*
B27M 3/04 *(2006.01)*

(21) Application number: **08003452.3**

(22) Date of filing: **26.02.2008**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA MK RS

(71) Applicant: **Kronoplus Technical AG**
9052 Niederteufen (CH)

(72) Inventors:
- **Mizanin, Martin, Dipl. Ing.**
  08006 Presov 6 (SK)
- **Nachaj, Pavol, Dipl. Ing.**
  08005 Presov 5 (SK)
- **Kotul'ák, Jozef, Dipl. Ing.**
  09302 Vranov nad Topl'ou 2 (SK)

(74) Representative: **Heselberger, Johannes**
Patent- und Rechtsanwälte
Bardehle - Pagenberg - Dost
Altenburg - Geissler
Galileiplatz 1
81679 München (DE)

(54) Multiply panel for floor, ceiling or wall coverings

(57) The present invention relates to a panel (20; 30; 50) for a floor, ceiling or wall covering, comprising a base plate (21; 31; 51) made from a first material having a front surface, a rear surface and a circumferential border; and at least one coupling bar (22; 32, 33; 41, 42; 54) made from a second material different from the first material. The coupling bar is provided with mechanical connection means (36, 37; 43, 44; 55) and extends along at least a portion of the circumferential border of the base plate to allow a connection with other correspondingly shaped panels (20; 30; 50). In this way a comparably inexpensive e.g. floor covering is provided.

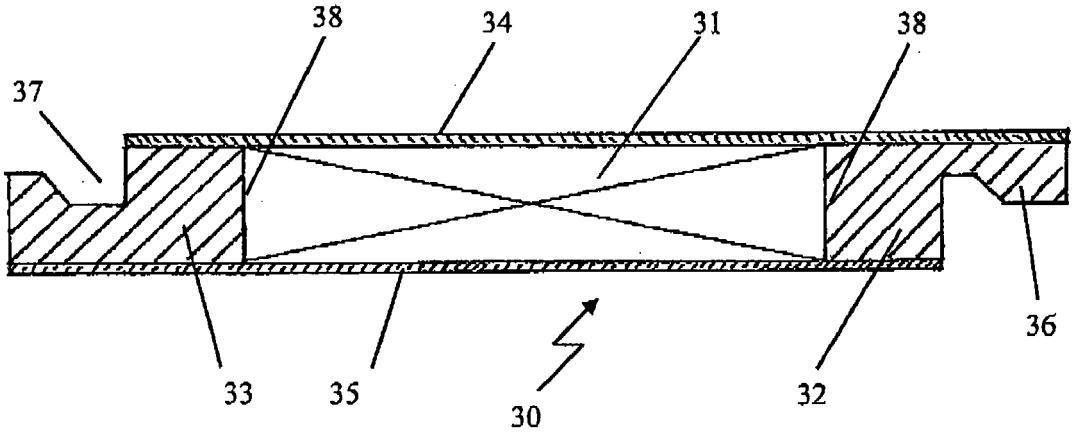

Fig. 3

EP 2 096 230 A1

Description

1. Field of the invention

[0001] The present invention relates to a panel for a floor, ceiling or wall covering.

2. Technical Background

[0002] From the prior art a number of different floor, ceiling or wall panels are known. In the simplest case the same consist of a board of massive wood. Floor, ceiling or wall panels made of massive wood are however expensive and can usually only be installed by skilled experts. However, massive wood panels provide a very attractive and decorative surface. To avoid the high costs of massive wood panels and to provide at the same time the attractive surface of such a panel, for example veneer panels were developed. Veneer consists of thin sheets, usually in the range of 0.3 - 6.0 mm, made from a high quality wood, which are glued onto a cheaper carrier material. One disadvantage of these materials is that the decorative layer made from high quality wood usually shows a different behavior when subjected to heat and moisture than the material of the carrier, which leads to distortions of the panels. In order to deal with this problem so-called pre-finished flooring use a number of thin rod-like wooden elements as carrier, which- are arranged underneath the decorative wood layer, to achieve a compensation for the different expansion behavior of the different materials (confer to figure 1). However, such pre-finished floorings are still relatively expensive and require a skilled expert for installation.

[0003] A further disadvantage of such floorings is, that the wooden carrier elements can not be provided with integral mechanical connecting means as for example groove or tongue connecting means. Therefore, these floorings are glued, which makes the installation correspondingly complex and expensive.

[0004] From the prior art further laminate panels are known for floor, ceiling or wall coverings. Laminate panels are comparably inexpensive in contrast to the above mentioned panels. Laminate panels consist in simplest form of a carrier board of MDF or HDF with a thickness of 4 - 8 mm which are provided with a printed décor paper on their upper surface. The carrier board is commonly provided on its lower side with a so-called counter acting paper, which serves to act against a distortion of the carrier board caused by the décor layer. The décor layer is usually provided with a thin abrasion resistant layer, which consists of small corundum particles, which are imbedded in a resin. The decorative upper surface of the laminate panels thus does not consist of real wood, but rather of the above mentioned printed décor paper. The problems of pre-finished wood flooring with regard to the different expansion behavior of the decorative wood layer and the carrier material is thus avoided, so that relatively inexpensive materials can be used as carrier materials for laminate panels. Further, such laminate panels are usually provided with tongue and groove connecting means, or with so-called "click" connections, which allows a simple and easy installation process. One disadvantage of laminate panels compared to pre-finished flooring is the limited life-time. Further, although improvements have been made in the past, laminate panels do not yet provide the natural texture and look of wood veneer or massive wood panels.

[0005] Based on this prior art it is the object of the present invention to provide a panel for a floor, ceiling or wall covering which eliminates or reduces the disadvantages of the prior art. The invention in particular tries to solve the problem to provide a panel for a floor, ceiling or wall covering, which combines the advantages of pre-finished floor coverings and laminate and which avoids the disadvantages of both. It is in particular the object of the invention to provide a panel for a floor, ceiling or wall covering, which can be produced by using inexpensive materials and which nevertheless has an attractive and decorative surface, which is easy and cost efficient to install and which provides a high dimensional stability.

[0006] These and other objects, which will become apparent when studying the following description of the invention are solved by a panel for a floor, ceiling or wall covering according to claim 1.

3. Detailed description of the invention

[0007] The panel for a floor, ceiling or wall covering according to the invention comprises at least a base plate from a first material, in particular a relatively inexpensive material, like for example a wood composite material or a plastic material. The plate comprises a front surface, a rear surface and a circumferential border. The front surface is the face of the panel which is in installed condition usually parallel with and facing away from the floor, wall or ceiling it is covering. The rear surface is the surface of the plate opposite of the front surface and is usually parallel therewith. The circumferential border denotes the edge or edges of the panel. If the panel has e.g. a flat rectangular shape the circumferential border consists essentially of the four edges of the rectangle. Furthermore, the panel according to the invention comprises at least one coupling bar made from a second material different than the first material, like for example soft or hard wood, which bar is provided with mechanical connection means and extends along at least a portion of the circumferential border to allow a connection with correspondingly shaped panels, in order to produce a covering for a floor, wall or ceiling. The coupling bar may e.g. extend uninterrupted along e.g. an edge of the plate or it may be provided in form of several smaller bars, as long as it can still serve its main purpose to allow the coupling or connection of further similar shaped panels. The coupling bar(s) is(are) preferably glued to the border of the base plate by a suitable adhesive as e.g. a heavy duty wood glue. Advantageously, the mechanical connection

means are provided in the form of tongue and groove type connection means which are preferably cut or milled in the coupling bar to form an integrated unit therewith.

[0008] The provision of the coupling bar allows the use of relatively cheap materials, such as chip board or oriented strand board (OSB), for the base plate, i.e. materials which are usually not suitable as material for the base plate of such panels, due to a lack of structural strength, which prohibits milling or cutting of mechanical connection means into these materials. In other words: the coupling bar allows the use of materials for the base plate, which can usually not be provided with reliable integrated mechanical connection means, due to a lack of strength thereof. Therefore, a base plate from a cheap material such as chip board provided with a coupling bar from a second material such as soft wood, allows to provide a relatively cheap panel for a floor, ceiling or wall covering having mechanical connection means, which allow to easily connect a plurality of similar panels with each other to provide a covering.

[0009] Furthermore, the base plate may be covered with a decorative covering layer which may for example be wood veneer. As explained above, the different expansion behavior of veneer and cheap base material such as inexpensive types of wood, usually makes it necessary to provide an intermediate layer between the veneer and the base plate. However, according to the invention the coupling bar allows to use materials for the base plate having similar expansion behavior as the upper layer like e.g. a suitably treated wood composite material or plastic material such that both may be glued together without the necessity for an intermediate layer. In other words: since the coupling bar serves for the mechanical connection it is now possible to choose a material for the base plate which is not necessarily strong enough to be provided with connection means on its own as long as it has a suitable expansion behavior. Thus, it is now possible to use relatively inexpensive materials for the base plate which were considered as unsuitable heretofore.

[0010] In yet another preferred embodiment of the invention, the rear surface is covered with a countermove layer. This layer may consist of veneer as well. In a preferred embodiment of the invention, the covering layer is a high quality veneer and the lower layer is a low quality veneer to save costs. The counteracting layer serves to prevent a distortion of the panel, when the covering layer is applied to the front surface. Alternatively, the countermove layer consists essentially of a synthetic foil.

[0011] Preferably, the coupling bar is flush with the front surface of the base plate and/or the covering layer covers both the base plate and at least a portion of the coupling bar. This is advantageous not only for aesthetic reasons but it also increases the stability of the panel in the region where the coupling bar and the base plate are joining. In particular it makes the finished floor, ceiling or wall covering more stable with respect to concentrated (i.e. point like) loads. In yet another embodiment of the panel, the coupling bar is flush with the rear surface of the base plate.

[0012] In another preferred embodiment, the coupling bar is arranged on at least two opposing sides of the base plate. In another embodiment, the coupling bar is provided in form of a frame surrounding the base plate on its entire perimeter.

[0013] In a preferred embodiment of the invention, the mechanical connection means are provided as tongue- and groove type connections means, as they are well known in the art of e.g. laminate floorings and as they are for example described in the co-owned US 6,247,285 or EP 1 157 176. Advantageously, the groove and tongue connecting means are milled or cut into the coupling bar, so that coupling bar and connecting means form an integrated unit. Alternatively or as a pre-processing, tongue and groove may also be cut into the coupling bar.

[0014] In a preferred embodiment of the invention, the coupling bar is glued to the base plate. The gluing results in a stable connection between the coupling bar and the base plate. The joining surface of the coupling bar and the base plate may be essentially perpendicular to the front surface of the base plate. However, in a preferred embodiment, the joining surface of the coupling bar and the base plate is not perpendicular but rather inclined to the front surface to some extend. In this case, the base plate and the coupling bar are inclined with respect to the plane of the front or rear surface of the base plate, such that the area of the joining surface is increased. This results in a more stable connection between the coupling bar and the base plate.

[0015] In a preferred embodiment the base plate is made from chip board or particle board. Chip and particle board is a relatively inexpensive wood material, fabricated from wood particles, such as wood chips, saw mill shavings, or saw dust and a synthetic resin or other suitable binder, which are pressed together. Another material which may be used for the base plate is medium density fiberboard MDF or HDF, although this material is usually more expensive than chip board. Another material which may be used for the base plate is oriented strand board (OSB) or waver board which is a wood product formed by layering strands or flakes of wood in specific orientations and which is also relatively inexpensive. Generally, particularly preferred materials are other composite material on ligno-celluloses basis.

[0016] In a preferred embodiment of the invention, the coupling bar is made from soft wood. Soft wood is wood from conifers which are needle bearing trees such as pine, spruce, cedar, fir, larch, douglas-fir, hemlock, cypress, redwood and yew. Soft wood has the advantage that it is easy to work. Another notable advantage of the soft wood is its low swelling value. In a further embodiment of the mention, the coupling bar is made from hard wood. Hard wood is wood from broad-leaved or angiosperm trees. In another preferred embodiment, the coupling bar is made from plastic or metal. Plastic or metal allows for an easy formation of the mechanical con-

nection means and increase the stability, in particular, the form stability of the floor, ceiling or wall covering.

4. Description of preferred embodiments

[0017] In the following, the figures are described in detail.

Figure 1 schematically shows the structure of a grefinished wood floor according to the prior art;

Figure 2 schematically shows the structure of a panel according to the present invention before connection means are milled into the coupling bars;

Figure 3 shows a panel according to the present invention with mechanical connection means in the form of simple groove and tongue means;

Figure 4 exemplarily shows a detail example of a preferred geometry of groove and tongue connecting means, which may be milled into coupling bars;

Fig. 5 shows an alternative way to connect a coupling bar to the border of a base plate; and

Figs. 6a/b are schematically views of two panels according to the invention showing alternative arrangements of coupling bars.

[0018] In figure 1 a pre-finished wood floor element 10 according to the state of the art is shown. Below a covering layer 12 of wood veneer, a plurality of small wood rods 11 are provided which serve for a re-compensation of the different expansion behaviors of the covering layer 12 and a base plate 13.

[0019] In figure 2 a panel 20 for a floor, ceiling or wall covering according to the present invention is schematically shown. The proportions are not true to scale but have been chosen to allow for a better presentation. As can be seen from figure 2, the base plate 21 is provided with two coupling bars 22 on its left and right edges or borders and a thin decorative covering layer 23 and a counteracting layer 24. In this embodiment the base plate 21 is an inexpensive chip board material and the decorative covering layer 23 is a high quality wood veneer. The counteracting layer 24 is in turn made from a lower quality wood veneer. For the coupling bars 22 spruce wood may be used. The covering layer 23 and the lower layer 24 may have a thickness ranging mainly from 0,3 - 6 nun. The base plate 21 may have a thickness of 6 - 20 mm. The main elements 21, 22, 23 and 24 of the panel 20 are attached to each other by a suitable adhesive, as known to the skilled person. Reference number 28 denotes the joining surface of plate 21 and coupling bar 22. As can be seen from the figure the joining surface 28 is essentially perpendicular to surface 23. This advantage of this arrangement is the possibility to easily machine the same.

[0020] Figure 3 shows a similar panel as fig. 2 but with groove and tongue connecting means milled or cut into the coupling bars. A base plate 31 made from chip board is provided with a decorative covering layer 34 and a counteracting layer 35. A coupling bar 33 on the left side of the base plate is provided with a groove 37 and a coupling bar 32 on the opposite side of the base plate is provided with a tongue 36. Obviously, the arrangement is only exemplary and could e.g. also be reversed. If two of the panels 30 shown are to be connected, the tongue 36 of the first panel snuggly fits into the groove 37 of the second panel such that a firm and stable connection between two panels is established. Reference number 38 denotes the joining surfaces of plate 31 and coupling bars 33 respectively 32. Also in this case the joining surface 38 is essentially perpendicular to surface 34.

[0021] Figure 4 shows a more sophisticated example for tongue and groove connecting means as are contemplated by the present invention. Two coupling bars 41 and 42 of two similarly build panels (not shown) are shown, having mechanical connection means in the form of a tongue 43 respectively a groove 44.

[0022] Figure 5 shows a preferred embodiment of the present invention in which the joining surface 53 of the coupling bar 54 with the base plate 51 is not perpendicular to the decorative surface 52 of panel 50. This embodiment has the advantage that the area of the joining surface 53 is greater than in the case when the joining surface 53 is perpendicular to the decorative surface 52 of the panel 50. Since in the shown embodiment in figure 5 the angle between the joining surface 53 and the upper side 52 of the panel 50 is approximately 45°, the joining area between the coupling bar 54 and the base plate 51 is approximately 1,4 kinds larger than in perpendicular case. This alignment advantageously increases the stability of the connection between the coupling bar 54 and the base plate 51. In particular, it is more stable with respect to concentrated (point like) load in the region of joining surface. 56 denotes a counteracting layer.

[0023] Figs. 6a and 6b show schematically two possible alternatives for the arrangement of coupling bars at the edges or borders of a panel. In fig. 6a the panel 61 has a generally rectangular shape and two coupling bars 62 are provided to the left and to the right of the panel as seen form above. The coupling bars 62 extend essentially over the whole length of the panel. In fig. 6b the panel 63 also has a generally rectangular shape, but it is provided with four coupling bars 64 on all four edges of the panel, i.e. essentially on the whole circumferential border of the base plate. The bars 64 thus form a frame around the panel 63, surrounding the base plate essentially on its entire perimeter. As one can see the shorter bars are somewhat longer than the edge of the panel

they are attached to. In this way coupling gaps at the corner of the panel are prevented. Obviously, as an alternative, also the longer bars could extend beyond the edge of the panel to achieve the same effect. It should be noted that the coupling bars are only schematically shown and are in practice provided with mechanical coupling means, which are e.g. milled in the coupling bars 62, 64 after the bars are attached onto the edges of the panels 61 respectively 63.

Claims

1. Panel (20; 30; 50) for a floor, ceiling or wall covering, comprising:

   a base plate (21; 31; 51) made from a first material having a front surface, a rear surface and a circumferential border; and
   at least one coupling bar (22; 32, 33; 41, 42; 54) made from a second material different from the first material, which coupling bar is provided with mechanical connection means (36, 37; 43, 44; 55) and extends along at least a portion of the circumferential border of the base plate to allow a connection with other correspondingly shaped panels (20; 30; 50).

2. Panel (20; 30; 50) for a floor, ceiling or wall covering according to claim 1, **characterized in that** the front surface of the base plate (21; 31; 51) is provided with a decorative covering layer (23; 34; 52).

3. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the rear surface of the base plate (21; 31; 51) is covered with a countermove layer (24; 35; 56).

4. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the covering layer (23; 34; 52) and/or the countermove layer (24; 35; 56) comprise a wood veneer.

5. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of claims 1 to 3, **characterized in that** the covering layer (23; 34; 52) comprises a wood veneer and the countermove layer (24; 35; 56) essentially consists of a synthetic foil.

6. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the coupling bar (22; 32, 33; 41, 42; 54) is flush with the front surface and/or the rear surface of the base plate (21; 31; 51).

7. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the coupling bar (22; 32, 33; 41, 42; 54) is arranged on at least two opposing sides of the plate.

8. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the coupling bar (22; 32, 33; 41, 42; 54) is provided in form of a frame surrounding the base plate (21; 31; 51) on its entire perimeter.

9. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the mechanical connection means are tongue- and groove type connection means (36, 37; 43, 44).

10. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the coupling bar (22; 32, 33; 41, 42; 54) is glued to the base plate (21; 31; 51).

11. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** a joining surface (28; 38) of the coupling bar (22; 32, 33; 41, 42; 54) and the base plate (21; 31; 51) is essentially perpendicular to the front surface of the base plate (21; 31; 51).

12. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the first material is a composite wooden material, like e.g. chip board or oriented strand board (OSB) material.

13. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the first material is a plastic material.

14. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of the preceding claims, **characterized in that** the second material is wood.

15. Panel (20; 30; 50) for a floor, ceiling or wall covering according to any of claims 1 to 13, **characterized in that** the second material is plastic or metal.

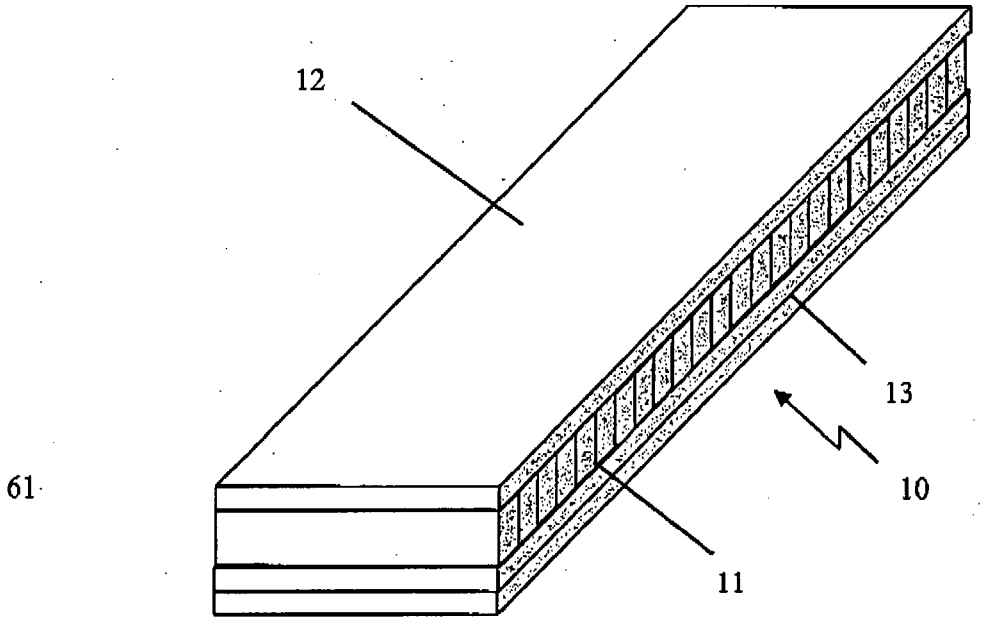

Fig. 1
(Prior art)

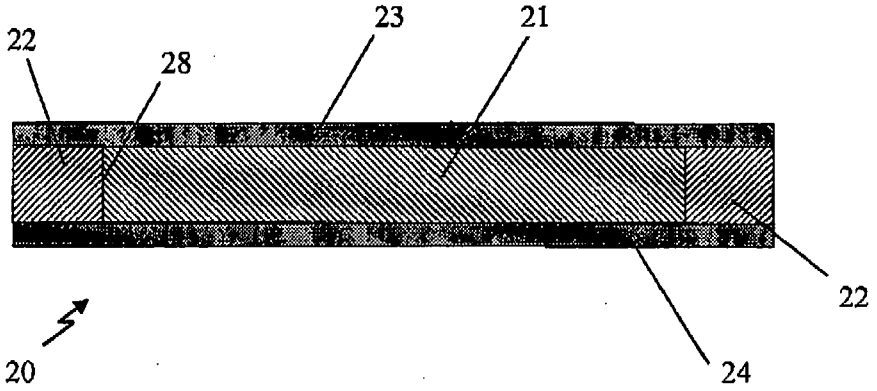

Fig. 2

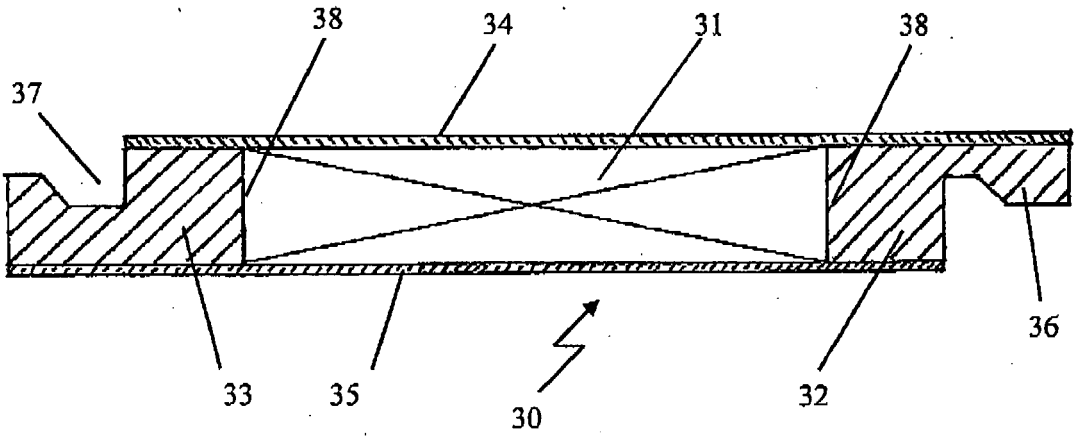

Fig. 3

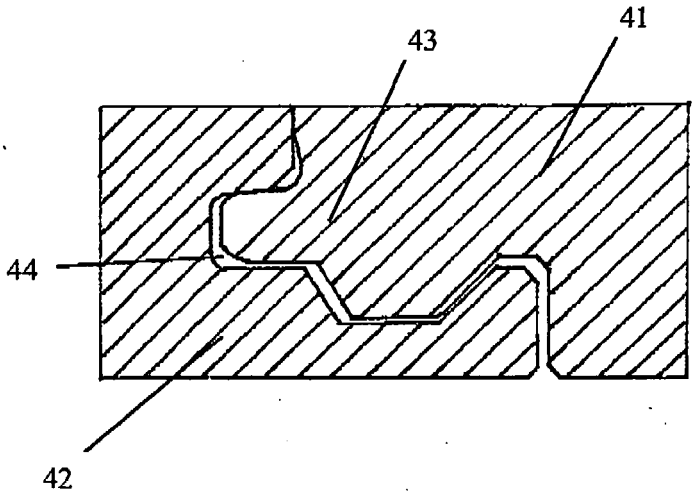

Fig. 4

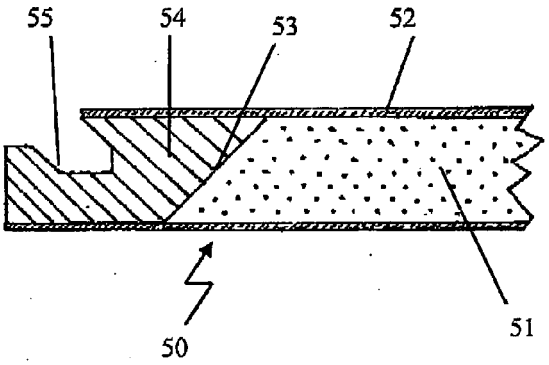

Fig. 5

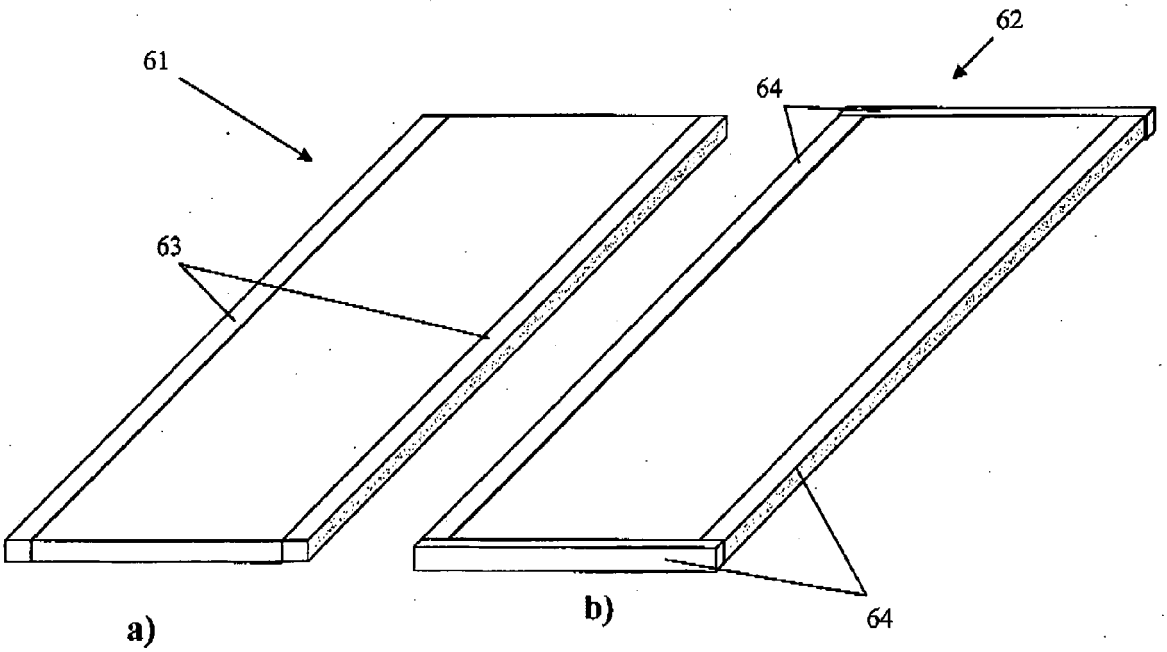

Fig. 6

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 3452

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2007/141605 A (FLOORING IND LTD [IE]; CAPPELLE MARK [BE] FLOORING IND LTD SARL [LU];) 13 December 2007 (2007-12-13) * page 34, line 12 - page 64 * * figures *	1-15	INV. E04F13/08 E04F15/02 B27M3/04
X	JP 2006 037520 A (MATSUSHITA ELECTRIC WORKS LTD) 9 February 2006 (2006-02-09) * paragraph [0039] * * paragraph [0032] * * figures 8,9 *	1-12,14	
X	EP 1 770 230 A (OTGER TERHUEME HOLZWERK GMBH & [DE] OTGER TERHUERNE HOLZWERK GMBH [DE]) 4 April 2007 (2007-04-04) * paragraph [0028] * * paragraph [0033] * * figures 8,9 *	1-6,9, 11,12, 14,15	
X	DE 101 63 435 C1 (SCHULTE JOHANNES [DE]) 6 February 2003 (2003-02-06) * paragraph [0017] - paragraph [0021] * * figures *	1-4,6,7, 9,11,14	TECHNICAL FIELDS SEARCHED (IPC) E04F B27M
X	US 2004/237454 A1 (NELSON THOMAS J [US]) 2 December 2004 (2004-12-02) * paragraph [0055] - paragraph [0073] * * figures 5-12 *	1-3,6-9, 11-13,15	
X	EP 1 207 246 A (PREMARK RWP HOLDINGS INC [US]) 22 May 2002 (2002-05-22) * paragraph [0030] - paragraph [0043] * * figures *	1-3,6-8, 11-13,15	

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 June 2008	Bouyssy, Vincent

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 08 00 3452

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2004/015221 A (KAINDL M [AT]) 19 February 2004 (2004-02-19) * page 16, line 13 - page 24 * * claims * * figures *	1-3,6,7, 9-15	
X	WO 03/087498 A (VALINGE ALUMINIUM AB [SE]; PERVAN DARKO [SE]) 23 October 2003 (2003-10-23) * page 10 * * figure 3e *	1-3,6,7, 9,11,14	
X	WO 94/01628 A (NIKKEN SEATTLE INC [US]) 20 January 1994 (1994-01-20) * page 3, line 22 - page 5, line 29 * * figures *	1,2,4, 6-9,12, 15	
X	WO 96/27721 A (PERSTORP FLOORING AB [SE]; MAARTENSSON GOERAN [SE]) 12 September 1996 (1996-09-12) * page 2, paragraph 4 - paragraph 5 * * page 3, paragraph 3 - page 5 *	1,2,6-15	
D,A	WO 01/48332 A (KRONOSPAN TECH CO LTD [CY]; MOEBUS MAIK [DE]) 5 July 2001 (2001-07-05) * the whole document *		TECHNICAL FIELDS SEARCHED (IPC)
D,A	US 6 247 285 B1 (MOEBUS MAIK [DE]) 19 June 2001 (2001-06-19) * the whole document *		

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	23 June 2008	Bouyssy, Vincent

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 00 3452

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-06-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2007141605 A	13-12-2007	BE 1017157 A3	04-03-2008
JP 2006037520 A	09-02-2006	NONE	
EP 1770230 A	04-04-2007	DE 202005021274 U1	12-07-2007
DE 10163435 C1	06-02-2003	NONE	
US 2004237454 A1	02-12-2004	NONE	
EP 1207246 A	22-05-2002	BR 0105076 A	25-06-2002
		CA 2359419 A1	20-05-2002
		CN 1354312 A	19-06-2002
		MX PA01011868 A	24-05-2002
WO 2004015221 A	19-02-2004	AU 2003240255 A1	25-02-2004
		CA 2493579 A1	19-02-2004
		CN 1671931 A	21-09-2005
		DE 10233731 A1	08-04-2004
		EP 1527240 A1	04-05-2005
		US 2004016197 A1	29-01-2004
WO 03087498 A	23-10-2003	AU 2003230476 A1	27-10-2003
		BR 0308961 A	01-02-2005
		CA 2481838 A1	23-10-2003
		CN 1650081 A	03-08-2005
		EP 1497511 A1	19-01-2005
		JP 2005522605 T	28-07-2005
		NZ 536218 A	31-03-2006
		RU 2307219 C2	27-09-2007
		SE 525657 C2	29-03-2005
		SE 0201059 A	09-10-2003
		UA 79459 C2	25-06-2007
		US 2005208255 A1	22-09-2005
		US 2008008871 A1	10-01-2008
		ZA 200408317 A	26-07-2006
WO 9401628 A	20-01-1994	US 5295341 A	22-03-1994
WO 9627721 A	12-09-1996	AT 202826 T	15-07-2001
		AU 4960096 A	23-09-1996
		BR 9607272 A	23-06-1998
		CA 2213757 A1	12-09-1996
		CN 1177390 A	25-03-1998
		DE 69613682 D1	09-08-2001
		DE 69613682 T2	08-05-2002

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 08 00 3452

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

23-06-2008

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9627721 A		DK 813641 T3	24-09-2001
		DK 200100168 U1	29-06-2001
		EP 0813641 A1	29-12-1997
		ES 2158297 T3	01-09-2001
		GR 3036737 T3	31-12-2001
		HK 1005251 A1	14-12-2001
		JP 3587855 B2	10-11-2004
		JP 11501377 T	02-02-1999
		NO 974110 A	06-11-1997
		PT 813641 T	28-12-2001
		US 6418683 B1	16-07-2002
		US 6101778 A	15-08-2000
WO 0148332 A	05-07-2001	AT 252674 T	15-11-2003
		AU 3424100 A	09-07-2001
		CA 2363184 A1	05-07-2001
		CN 1318125 A	17-10-2001
		CZ 20013083 A3	17-07-2002
		EE 200100442 A	16-12-2002
		EP 1157176 A1	28-11-2001
		ES 2206205 T3	16-05-2004
		HU 0105354 A2	29-04-2002
		JP 2003518575 T	10-06-2003
		LT 2001085 A	25-01-2002
		LV 12741 A	20-10-2001
		PL 349278 A1	15-07-2002
		RO 120984 B1	30-10-2006
		SI 20592 A	31-12-2001
		US 7337588 B1	04-03-2008
US 6247285 B1	19-06-2001	DE 29803708 U1	28-05-1998

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 6247285 B **[0013]**
- EP 1157176 A **[0013]**